

CLAIMS:

- Sub A27
1. A method of increasing bandwidth utilization of a transmission channel having a first bandwidth capacity and operative at a first transmission rate comprising the steps of:
 - providing one or more input bit streams each having a transmission rate that does not exceed that of said first transmission rate;
 - dividing said one or more input bit streams into a plurality of sub-streams, each having a bandwidth lower than said first bandwidth capacity;
 - selecting a group of sub-streams out of said plurality of sub-streams, which group has a combined bandwidth just lower than said first bandwidth capacity;
 - carrying said selected group of sub-streams over said transmission channel; and
 - assembling said selected group of sub-streams into an output bit stream.
 2. The method of claim 1 wherein said dividing step is performed using an inverse multiplexing technique producing said plurality of substreams and overhead bits.
 3. The method of claim 1 wherein said selecting step is performed by determining said group of sub-streams such as to minimize wasted bandwidth of said first bandwidth capacity.
 4. The method of claim 1 wherein said first bandwidth capacity is associated with a DS3 transmission channel, and wherein said input bit streams comprise a plurality of E3 signals, such that in said dividing step, said plurality of E3 signals are each divided into 18 parallel E1 sub-stream signals, and in said selecting step, a group of 21 of said parallel E1 sub-stream signals is selected for transmission over said DS3 transmission channel.
 5. The method of claim 4 wherein seven E3 signals are carried in six DS3 transmission channels.
 6. The method of claim 4 for use in an SDH type of network, wherein an STM1 signal carries three DS3 signals each comprising said selected group of 21 of said

parallel E1 sub-stream signals, such that said STM1 signal carries an additional 9 E1 signals for each three DS3 signals carried therein.

7. A system for increasing bandwidth utilization of a transmission channel having a first bandwidth capacity and operative at a first transmission rate, said system comprising: means for providing one or more input bit streams having each having a transmission rate that does not exceed that of said first transmission rate;

means for dividing said one or more input bit streams into a plurality of sub-streams, each having a bandwidth lower than said first bandwidth capacity;

means for selecting a group of sub-streams out of said plurality of sub-streams, which group has a combined bandwidth just lower than said first bandwidth capacity; and

means for assembling said selected group of sub-streams into an output bit stream after said selected group of sub-streams is carried over said transmission channel.

8. The system of claim 7 wherein said means for dividing said input bit streams into a plurality of sub-streams comprises an inverse multiplexer.